

REMARKS

Claims 2-4 are objected to for alleged minor informalities. Specifically, the Office Action alleges that each of claims 2-4 should be amended to recite “as measured from the upper surface of the substrate.” Applicants respectfully disagree.

Applicants respectfully assert that the language recited by each of claims 2-4 is both clear and concise with regard to the structures recited therein. For example, Applicants respectfully submit that recitation of “from a surface of the substrate” clearly describes each of the structures recited by claims 2-4. Moreover, Applicants respectfully submit that amending each of claims 2-4 by reciting “as measured from the upper surface of the substrate” may not be supported by the originally-filed specification and, therefore, could raise issues regarding requirements under 35 U.S.C. § 112. Accordingly, Applicants respectfully decline amending each of claims 2-4, as set forth in the Office Action.

Claim 1 stands rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Yu (US 6,734,931) in view of Minoura (JP 08-106153). Applicants respectfully traverse the rejection for at least the following reasons.

The Office Action alleges that Yu discloses all the features recited by independent claim 1, but does not teach “that the panel identification and the plurality of color filter layers are formed of the same material.” Thus, the Office Action relies upon Minoura for allegedly teaching simultaneous formation of identification marks and color filters from the same material. In addition, the Office Action alleges that “[o]ne would be motivated to form the panel identification and the plurality of color filter layers of the same material as taught by Minoura in

order for quality control to detect a problem with the color filters by monitoring the panel identification.” Accordingly, the Office Action alleges that “it would have been obvious to modify the liquid crystal device as taught by Yu and form the panel identification and the plurality of color filter layers of the same material as taught by Minoura.” Applicants respectfully disagree.

Applicants respectfully assert that Minoura provides no teaching or suggestion with respect to forming identification marks and color filters of the same material “in order for quality control to detect a problem with the color filters by monitoring the panel identification.” In addition, Applicants respectfully assert that the alleged motivation set forth in the Office Action is not supported by combining the teachings of Minoura and Yu. For example, Applicants respectfully assert that Yu specifically teaches forming the alignment key 217 and the identification mark 219 during the process of patterning the black matrix 213, and then forming red, green, and blue color filters 215 to overlap portions of the black matrix, as shown in FIG. 5A of Yu. Thus, as pointed out in the Office Action, the alignment key 217 and the identification mark 219 are formed of the same material as the black matrix 213.

In contrast to Yu and Applicants’ claimed invention, Minoura actually teaches that the identification marking 6 can be formed using the same approach as the manufacturing approach of the usual color filter. See paragraphs [0010] to [0018] of the enclosed English-language machine translation of Minoura obtained for the JPO website. Thus, Applicants respectfully assert that Minoura does not teach that the identification marking 6 and the color filters 7 are formed of the same material, but teaches that the identification marking 6 and the color filters 7

may be formed using the same manufacturing approach. In other words, Minoura teaches using the same method for manufacturing both the identification marking 6 and the color filters 7, but teaches forming the identification marking 6 using chromium and forming the color filters 7 using a pigmented layer. Thus, since Minoura teaches using completely different materials for the identification marking 6 and the color filters 7, Applicants respectfully assert that the Office Action fails to establish a *prima facie* case of obviousness with regard to independent claim 1, and hence dependent claims 2-5.

Thus, for at least the above reasons, Applicants respectfully submit that Potter fails to make obvious Applicants' invention of claims 1-16 under 35 U.S.C. § 103(a), and respectfully requests that the rejection be withdrawn.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. As requested above, should the Examiner feel that there are any issues outstanding after consideration of the response, the Examiner is invited to contact the Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the re- filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time

under 37 C.F.R. § 1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Respectfully submitted,

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Dated: February 1, 2005

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PATENT ABSTRACTS OF JAPAN

(11)Publication number : 08-106153

(43)Date of publication of application : 23.04.1996

(51)Int.Cl.

G03F 1/08

G02B 5/20

(21)Application number : 06-241098

(71)Applicant : TOPPAN PRINTING CO LTD

(22)Date of filing : 05.10.1994

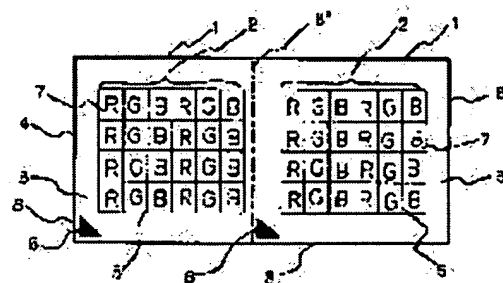
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(54) GLASS SUBSTRATE WITH IDENTIFICATION MARK

(57)Abstract:

PURPOSE: To provide a glass substrate whose material or delivery end is easily identified.

CONSTITUTION: This glass substrate 4 is provided with a main pattern part 2 on which fine patterns 5 and 7 whose color layers are different are formed at the center and provided with an end part 3 other than the pattern part 2 on the cut end. Besides, an identification mark 6 simultaneously formed with the pattern 5 or 7 of the pattern part 2 is given at the end part 3.



LEGAL STATUS

[Date of request for examination]

[Date of sending the examiner's decision of rejection]

[Kind of final disposal of application other than the examiner's decision of rejection or application converted registration]

[Date of final disposal for application]

[Patent number]

[Date of registration]

[Number of appeal against examiner's decision of rejection]

[Date of requesting appeal against examiner's decision of rejection]

*** NOTICES ***

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the glass substrate which can identify easily the quality of the material of this glass substrate, the delivery place of a glass substrate, etc. especially about the glass substrate used as glass plates for light transmission, such as a color filter and a photo mask.

[0002]

[Description of the Prior Art] There is a color filter as an example of the glass substrate with which the detailed light transmission nature and the detailed opaque pattern of a large number which different-** a hue are prepared in the center. As a color filter is shown in drawing 5 or drawing 6, the coloring layer 22 and the opaque black protection-from-light pattern 23 of the light transmission nature which consists of a pixel of three colors of red (R), green (G), and blue (B) are formed in the center section 27 of the glass plate 21 as a Maine pattern according to the predetermined array, respectively. And in addition to center-section 27 of a glass plate 21, the edge 26 where the coloring layer 22 or the protection-from-light pattern 23 is not given exists. This edge 26 was what serves as a fixed part in the case of conveyance of a color filter, is cut off by fixed width of face in case a color filter is incorporated in a product, and serves as a dimension controller.

[0003] And the corner was cut off in the shape of a triangle, and the glass plate 21 with which said center section 27 and edge 26 were formed had the case where the cage ETESHON flat (henceforth a cage hula) 24 for identifying the upper and lower sides of a glass plate 21 and its quality of the material was formed. That is, the cage hula 24 was what becomes discriminable by the location prepared. For example, in color filter creation, when a glass substrate 21 was moved for every process, the cage hula 24 was beneficially used as an object for the product check at the time of the check of the upper and lower sides of the object for confusion prevention of the glass plate 21 with which the quality of the materials differ, and a glass substrate 21, or shipment.

[0004]

[Problem(s) to be Solved by the Invention] However, when a corner was cut off as mentioned above and the cage hula 24 was formed, there was a problem that clipping processing which uses a cutter was required and the routing counter of color filter creation will increase. Since two or more discernment is expressed especially, when cutting off two or more corners, the clipping processing was complicated. Moreover, as the cage hula 24 can be formed only in a part with the cutting edge 25, therefore it is shown in drawing 6, when it is difficult to form the cage hula 24 to each color filter beforehand when manufacturing the color filter of two or more sheets from the glass plate 21 of one sheet and a glass plate 21 is carved into the glass plate of two sheets from cutting edge 25', a color filter without the cage hula 24 will be manufactured.

[0005] Or although the method of writing information (or mark), such as a product name, by hand with a pen was also in the glass substrate, when washing, development, etc. were processed to the glass substrate 21 on the occasion of formation of the detailed pattern of the coloring layer 22 or the protection-from-light pattern 23, the information indicated by said handwriting was what disappears easily. Furthermore, the activity of the handwriting to many glass substrates was what requires time amount.

[0006] If it is in "the glass substrate with identification marking" of this invention based on the fault of the above conventional techniques, it aims at forming the identification marking for identifying glassware easily.

[0007]

[Means for Solving the Problem] Therefore, if it is in the glass substrate with identification marking of this invention, in the glass substrate with which many the detailed light transmission nature or the opaque Maine patterns which differ in a hue are prepared in the center, and edges other than said Maine pattern section are established in the cutting edge, it is characterized by forming in this edge the identification marking replaced with a cage hula of Isshiki or two or more colors which form said pattern.

[0008]

[Function] In the glass substrate with identification marking concerning this invention, in case an edge plays the role of immobilization in the case of conveyance of a glass substrate and incorporates a color filter in a product, it plays the role of dimension doubling by being cut off by fixed width of face. And the upper and lower sides of a glass substrate, the quality of the material, a delivery-of-goods place, etc. are discriminable at a glance with identification marking.

[0009]

[Example] A drawing is used and explained about one example of this invention below.

[0010] Drawing 1 is "the glass substrate with identification marking" of this example, and is the example which used the glass substrate for the color filter. the inside of drawing, and 1 -- for an edge and 4, as for the protection-from-light section and 6, a glass substrate and 5 are [a color filter and 2 / the Maine pattern section and 3 / identification marking and 7] pixels.

[0011] A color filter 1 consists of a glass substrate 4 which has the Maine pattern section 2 of the center in which the detailed pattern of a large number which different-** a pigmented layer is prepared, and the edge 3 in which said pattern is not prepared. Here, the Maine pattern sections 2 are red and a thing by which green and the pixel 7 of each blue (it is called Following R, G, and B) color are formed, and the protection-from-light section 5 is further formed between each pixel 7. In addition, drawing 1 is simplified and a pixel usually consists of a detailed pattern.

[0012] Moreover, in a color filter 1, it says except Maine pattern section 2, and, as for an edge 3, a pixel 7 and the protection-from-light section 5 say the part which is not given at all. And in case an edge 3 builds the color filter 1 as a fixed part into a product at the time of conveyance of a color filter 1, it plays a role of the size adjustment section by ****ing. And identification marking 6 shows the information about a color filter 1, and is prepared in the edge 3.

[0013] The color filter 1 which consists of the above-mentioned configuration is manufactured by the "manufacture approach of a color filter" shown in drawing 2 .

[0014] First, the vacuum evaporatio film 11 of chromium is formed in the top face of a glass substrate 4 (process 21). And after applying the photosensitive resist 12 of a photo-curing mold on the vacuum evaporatio film 11 (process 22), it exposes through the photo mask 13 mentioned later (process 23), and the resist 12 of only the part where light was irradiated is stiffened.

[0015] And while the protection-from-light section 5 will be formed if all resists are exfoliated after removing the resist 12 of the unexposed section from a glass substrate 4 (process 24) and performing chromium etching processing finally by performing a development, identification marking 6 is formed (process 25).

[0016] Then, if the pixel 7 of R.G and B is formed so that the clearance between the formed protection-from-light sections 5 may be filled, it will become a color filter 1. What is necessary is just to perform formation of the pixel 7 of R, G, and B by general approaches, such as a color method, a pigment-content powder method, or a replica method, at this time.

[0017] As shown in drawing 3 , that to which light penetrates only field 5' corresponding to the protection-from-light section 5 and field 6' of the triangle corresponding to identification marking 6 is used for said photo mask 13. Then, the manufactured color filter 1 becomes like drawing 1 .

[0018] That is, identification marking 6 can be formed by the same approach as the manufacture approach of the usual color filter. And things involved in a glass substrate 4, such as the quality of the material of a glass substrate 4, thickness, its delivery place, quality, and the quality of the material that constitutes the protection-from-light section 5 and a pixel 7, are discriminable with identification marking 6.

[0019] In addition, this invention is not limited to the example mentioned above. Two or more identification marking 6 manufactured by the above-mentioned manufacture approach can be formed in an edge 3, as shown in drawing 4 . In that case, it is possible to change a discernment item by the location as the upper right shows a delivery place and the upper left shows the quality of the material of a glass substrate 4.

[0020] Moreover, it is also possible to form both the cage hula 24 by cutting and the identification marking 6. In this case, the cage hula 24 by cutting is used as an object for discernment about a glass substrate 4, and identification

marking 6 is good to use it as an object for discernment of being related with glass substrates, such as quality and a delivery place.

[0021] And as shown in drawing 4 , if the part in which identification marking 6 is formed is an edge 3, it will not adhere to a corner.

[0022] Moreover, it is better to form identification marking 6 inside (Maine pattern section 2 side) about 0.5-2mm from the piece 8 of cutting of glass like drawing 1 , in order to prevent peeling.

[0023] Furthermore, a discernment item can be made to increase further if identification marking 6 is formed using the color which forms a pattern two or more.

[0024] Moreover, it is not limited to the thing of the shape of a triangle shown in drawing 4 , but identification marking 6 can also be prepared in a rectangular head, or **** or an alphabetic character.

[0025] And it is the substrate which penetrates light like the mask used for the electrode plate for PDP, or the large-sized original edition as a glass substrate 4, and it is applicable if related with the substrate which penetrates the light by which the Maine pattern section which consists of a detailed putter of a large number which different-** a detailed hue is prepared in a center section, and the margin sections other than this Maine pattern section are prepared in the edge.

[0026] Moreover, as shown in drawing 1 , when cutting out one glass substrate 4 and manufacturing two or more glass substrate 4', it sets beforehand (process 25), and it is also possible to form the triangular identification marking 6 in the part equivalent to the lower left 24 of a color filter B, i.e., the cage hula of a color filter A, and it is not necessary to form the cage hula 24 by cutting in each of two or more glass substrate 4' in this case.

[0027]

[Effect of the Invention] If it is in the glass plate with identification marking of this invention, since identification marking is given to edges other than the Maine pattern section formed in the center, the upper and lower sides of a glass substrate, its quality of the material, thickness, a delivery place, etc. can identify easily according to the number and the part of this identification marking. Since said identification marking becomes in Isshiki of a pattern or two or more colors which form the Maine pattern section, it can be prepared in the process and coincidence which form one pattern, and, moreover, its discernment item of the increases. moreover, the prepared identification marking -- the Maine pattern section -- a degree -- even if it performs processing for forming a pattern, it does not disappear And identification marking may not choose the location which will be prepared if it is said edge, but may prepare it not only along the corner of a substrate but along the cutting side.

[Translation done.]